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(54) Short range wireless communication

(57) Systems and methods for a communication system implementing a short range communication link between devices advertising available information and services, and user devices which may initiate a request for further information or services. The communication system provides a low power solution utilizing an optimized combination of a carrier sensing and frequency division multiple access to avoid collisions. The optimization involves the use of a random mean zero value offset appended to the advertising devices' transmission frames. The offset increases the likelihood that a first

advertising device will recognize the transmissions of another advertiser's transmissions (i.e., determining that a channel is busy) and avoid unnecessary transmissions that will result in collisions. Upon recognition, the first advertiser may shift its transmission frame accordingly, thereby avoiding transmission collisions between advertisers. The communication system may be implemented in either a StandAlone LowRate system, or in a device with a pre-existing operational Bluetooth implementation.

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EUROPEAN SEARCH REPORT

Application Number
EP 03 25 4867

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X,P	WO 02/073893 A (ALINIKULA PETTERI; HONKANEN MAURI (FI); HUOMO HEIKKI (FI); LEINONE) 19 September 2002 (2002-09-19) * page 11, line 29 - page 12, line 5 * * page 10, line 22 - page 11, line 10 * * page 9, line 30 - page 10, line 4 * * page 8, line 2 - page 9, line 17 * * page 1, lines 8-25 *	1-4,7, 9-12	H04L12/28 H04L12/56
X	EP 1 193 951 A (NOKIA CORP) 3 April 2002 (2002-04-03) * paragraphs [0003], [0004], [0007] - [0009], [0022] - [0025], [0040], [0045], [0049] *	1-12,20, 23	
A	EP 1 113 690 A (TOKYO SHIBAURA ELECTRIC CO) 4 July 2001 (2001-07-04) * column 5, lines 7-25 * * column 3, lines 19-23 * * column 1, lines 32-44 * * column 1, lines 1-9 *	1-12,20, 23	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
A	US 5 870 388 A (LYE KIN MUN ET AL) 9 February 1999 (1999-02-09) * page 3, lines 45-51 * * column 2, line 13 - column 3, line 9 * * column 1, lines 1-35 *	1-12,20, 23	H04L H04Q
A	TRITTON J A: "Interactive home systems (IHS)-voice and data services" IEEE, 11 September 1988 (1988-09-11), pages 108-112, XP010071871 * page 111, right-hand column, lines 1-21 * * page 109, left-hand column, lines 9-28 * * page 108, left-hand column, lines 25-32 *	1,20	
	----- -/--		
-The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 25 November 2003	Examiner Pasini, E
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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EUROPEAN SEARCH REPORT

Application Number
EP 03 25 4867

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A	US 5 636 223 A (FRASER BUD ET AL) 3 June 1997 (1997-06-03) * column 2, line 37 - line 65 *	1-12,20,23	
A	NASIPURI A ET AL: "A multichannel CSMA MAC protocol for multihop wireless networks" WIRELESS COMMUNICATIONS AND NETWORKING CONFERENCE, 1999. WCNC. 1999 IEEE NEW ORLEANS, LA, USA 21-24 SEPT. 1999, PISCATAWAY, NJ, USA, IEEE, US, 21 September 1999 (1999-09-21), pages 1402-1406, XP010353705 ISBN: 0-7803-5668-3 * page 1403, left-hand column, line 56 - right-hand column, line 7 * * page 1402, right-hand column, lines 13-30 *	1-12,20,23	
A	LO F L ET AL: "Performance of multichannel CSMA networks" INFORMATION, COMMUNICATIONS AND SIGNAL PROCESSING, 1997. ICICS., PROCEEDINGS OF 1997 INTERNATIONAL CONFERENCE ON SINGAPORE 9-12 SEPT. 1997, NEW YORK, NY, USA, IEEE, US, 9 September 1997 (1997-09-09), pages 1045-1049, XP010263936 ISBN: 0-7803-3676-3 * paragraphs [0001] - [0003] *	8,10-12	
<p>The present search report has been drawn up for all claims</p>			<p>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</p>
Place of search Munich		Date of completion of the search 25 November 2003	Examiner Pasini, E
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p>		<p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document</p>	

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Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-12, 20,23



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LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 03 25 4867

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-12, 20,23

Short range wireless communication with transmission of
periodic advertisement messages based on the measurement of
an energy level on an initialisation channel.

2. claims: 13-19, 21,22

Short range wireless communication using an initialisation
channel and a unicast channel.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-11-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 02073893	A	19-09-2002	FI 20010484 A	10-09-2002
			EP 1366603 A1	03-12-2003
			WO 02073893 A1	19-09-2002
			US 2002193072 A1	19-12-2002

EP 1193951	A	03-04-2002	FI 20002160 A	30-03-2002
			EP 1193951 A2	03-04-2002
			US 2002039367 A1	04-04-2002

EP 1113690	A	04-07-2001	JP 2001189689 A	10-07-2001
			EP 1113690 A2	04-07-2001
			US 2001019956 A1	06-09-2001

US 5870388	A	09-02-1999	SG 42760 A1	17-10-1997
			GB 2303768 A ,B	26-02-1997

US 5636223	A	03-06-1997	CN 1142734 A ,B	12-02-1997

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82